Thurston County Public Works Comments from Dale Rancour, County Engineer

2012 Draft Stromwater Management Manual fro Western Washington

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I	1.6.9	1-21	I do not believe that the first paragraph is an accurate summary of the Construction Stormwater General Permit. Should be a reference to the actual permit for more detail information or maybe a link to the permit. Discharge to surface waters of the State (not just waters of the State) is the emphasis of the permit for clearing and grubbing and excavation activities	Link to actual permit language. In the first sentence on the fifth line add "surface" before waters of the State.
I	2.3	2-4	Need definition of "administrator"	
I	2.5.5	2-34	First sentence relative to minimum requirement #5 states where feasible with not link or reference to the appendix that defines feasible.	Include a reference to appendix 1-F for feasibility of Minimum Requirement #5.
I	2.5.5	2-35	Table 2.5.1 LID Requirements seems to apply to Phase 1 communities only since it refers to areas outside of the UGA.	Every reference in the table that refers to outside of the UGA put a foot note that his is for Phase I communities only.
I	2.5.5	2-35	Table 2.5.1 LID Requirements reference to BMP T5.13 needs to have an exception for steep slopes to allow Compost Blanket with Seed, Fertilizing and Mulch.	

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I	2.5.5	2-35	Porous Pavement – DOE has high support of Porous pavement. I see porous pavement as a high risk if there are problems with maintenance, infiltration, ground water elevation mainly due to the stromwater facility being located under the expensive pavement and maybe no alternative drainage location is available. Before I can be supportive of porous pavement information is needed on: 1) Life expectancy, 2) Resurfacing abilities, 3) Design (both structural traffic loads and drainage 4) Feasibility needs to include global benefit to cost comparison 5) More information on maintenance	Make porous pavement an administrator's option until more information can be obtained.
I	2.5.5	2-36	Mandatory List #1 &#2 should not give a preference to BMPs. Example in good infiltrating soils if bioretention is need adjacent to a road, the minimum biorention facilities may be adequate for the pavement runoff (not requiring porous pavement). I don't always agree with the risks that associated with the preference by the order of the listed BMPs. Particularly as relates to porous pavement. This should be the designers or the local agency's responsibility.	For Mandatory List #1 &#2, eliminate the reference to "Use the first BMP that is considered feasible."
I	2.8 & App 1-F	2-54	I am generally confused on the difference of 2.8 Exceptions/variances and App 1-F Feasibility. 2.8 Exceptions/ Variances is for economic hardship, but only seems to apply to a developers use before and after the new regulations and does not relate to the public dedication of roads that creates a new owner with economic issues of maintenance and operation.	Clarify that the administrator has the authority to grant a variance based on economic hardship relative to uncertainties or actual cost relative to maintenance and operation of LID BMPs.
I	App. I-F (II-B)	F-4	It is unclear when local codes can supersede or reduce LID (S5.C.5?)	

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II	3.3.3	3-17	The Elements need to work together versus separately. Example Element #5 Stabilize Soil shouldn't be needed if the soil is not subject to erosion and or the erosion control measure is more than adequate. Example -Class A soil where the curbs and sidewalks have been poured leaving a depressed area for the future planting strip; shouldn't need to stabilize the soils because no runoff or erosion is possible.	Add a statement that soil stabilization is not required if it can be shown that runoff is not possible.
III	3.3.4.5	3-69	The infiltration testing for the simplified method isn't very simple. Also I am confused at when to use the PIT or a grain size analysis. There are directions that the grain size analysis is to be used on soils that are not consolidated by glacial advance. This wasn't a restriction before for grain size above the water table, even though I can see it to a certain degree. Even the detail analysis for grain size can be similar that the PIT if drilling is required for water table monitoring and there is limited area t do the test in. Probably all of western Washington has had some degree of soil consolidation by glacial advance. Sometimes there are younger post-glacial soil on top that are good for infiltration.	Locations for grain size analysis needs clarification to not eliminate the use of grain size more than necessary.
III	3.3.6	3-83	For the PIT test, "excavate to the estimated surface elevation of the proposed infiltration facility" needs clarification. Example- is the bottom of the 18 inches of amended soil in a bio-retention facility?	Suggestion- excavate to the bottom or first area of infiltration of the facility.
III	3.3.6	3-86	Last paragraph- "For critical designs… of a specific layer can be obtained by using a PIT" and there is a reference of hydraulic conductivity to equation 5. Isn't it hard to use a PIT test if the layer is very deep? I don't understand the sentence that refers to equation 5 and I can't find equation 5 to help clarify the statement.	
III	3.3.6	3-87	Correction Factors seem to be the same for the PIT and the grain size analysis	Why not say this in the first of this section and delete the 1. And 2. Subsections?

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III	3.3.8	3-97	Fig. 3.27 Eng. Design Steps…- Hard to make sense out of figure that refers to tables that no longer exist and to equations that come much later in the text.	Update and relocate figure.
III	3.3.8.10	3-103	The size of a project for groundwater mounding analysis needs to take into account the size including the tributary are of the drainage facility. Example you could have a large project in overall impervious but a small area that is tributary to each of the drainage facilities.	
III	3.4	3-115	Is one year of groundwater monitoring adequate for the very low LID separation to groundwater required? We have groundwater tables that every ten or so years get higher and become above ground.	Clarify that one season of groundwater monitoring still needs to be related to other historical records or if close to separation limits will need a backup plan.
III	3.4	3-116	I do not agree that permeable pavement should be used when minimum requirements 1-9 and it is feasible. Feasibility needs to account for long term replacement costs. Also other infiltration options need to have preference over permeable pavement.	
III	3.4	3-117	Generally, I do not agree that the modeling of all of the LID facilities on site should be averaged and modeled as one. The facilities would have to be have common overflows other that the groundwater table connections to consider this. Too many unknowns about a groundwater table. May have a perched groundwater table for part of the project.	
III	7.8.2	C-17	I have used an amended soil mix that in addition to sand and compost had about a third of topsoil. This mixture I am sure meets BMP T5.13, but the results is that the mixture completely sealed off a treatment pond.	Do not give the credit for pasture when meeting BMP T5.13 or refine the mix to more simulate the improved specification for amended soil in bio-retention facilities. Or do you have better documentation that what is proposed is conservative?

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III	App III-C 7.1	C-2	For permeable pavement, when is a base considered above surrounding grade? How flat of a slope off of the edge of pavement is needed before the pavement is considered above the surrounding grade?	Mode all permeable pavement as grass.
III	App III-C 7	C-3	I believe correction factors should be applied. Assuming there is a minimum of grading because of source control, much of the pavement could be in highly variable organic top layers and not representative of the native soils below the top duff and or the roadway grading process could easily redistribute lower infiltrating top organic layers.	
III	App III-C7	C-6	Under Drainage Conveyance, it is not clear the thickness of the base rock that is required. If the drainage is away from the roadway prism I assume the roadway prism includes the base rock depth needed for pavement structural support and for freeze/thaw depths (usually a minimum of a foot depth). Any base rock depth for water storage or associated with infiltration needs to be additional base rock.	
III	App III-C 7	C-6	Limitations of allowing porous surface flow path greater than tributary impervious surface is confusing.	Clarify what is a porous pavement flow path. Is it a gutter line length to a catch basin times half of a crowned road width? If it is a driveway tributary to porous is half of a crowned porous road width times the driveway width?
III	App III-C7	C-6	I do not understand the acceptance test for a roadway?	
III	App III-C7	C-7	It is easier said than done to not track dirt on to a porous pavement after construction.	Apply additional correction factors for infiltration rates due to construction and future tracking or tributary erosion concerns.
III	App III-C7	C-7	Section needs to be added on patching and resurfacing	

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III	App III-C7.7	C-16	I don't think I have any problem with the tree credits assuming that they are based on some actual quantifiable testing. There should be some limitations on where the credits are applied	Tree credits shall be applied only in the tributary are to the stormwater facility that they impact.
III	App III-C7.8	C-17	I have used an amended soil mix that in addition to sand and compost had about a third of topsoil. This mixture I am sure meets BMP T5.13, but the results is that the mixture completely sealed off a treatment pond.	Do not give the credit for pasture when meeting BMP T5.13 or refine the mix to more simulate the improved specification for amended soil in bio-retention facilities. Or do you have better documentation that what is proposed is conservative?
III	App III-C7.9.1	C-20	The maximum recommended ponding depth of 12 inches is too small.	Change the maximum recommended ponding depth to at least 24 inches. If we are encouraging LID for source control that would include flow control we need to make bioretention more desirable as a design element. Water would rarely be at the 24 inches unless it is an extreme event and this depth should not be considered a drowning concern.
III	App III-C7.9.1	C-20	I seem to recall more design criteria in Vol V.	The design criteria needs to be made the same in other portion of the manual or the manual should refer to one location.
III	App III-C7.9.3	C-20	We were not aware that the runoff model has been revised to have different "Elements" representing Bioretention cells, Bioretention swales, Planter box, and CAFVS. We believe we have been successfully and conservatively modeling these facilities using the advanced model.	We reserve our comments on the new model "Elements" until we have had a chance to use them and compare them to our existing work.
III	App III-7.9.4.1 & 7.9.4.2	C-22	Clarification needs to be given on the amended soil infiltration reduction factor for long linear swale projects. I feel that there will or should be an increase use of these facilities to comply with source control, but a segment of the facility would be more representative of a needed correction factor than the total impervious and other areas.	For Bioretention swales use the representive tributary area for a 100 foot (some more thought may be appropriate for this length) length to determine the correction factor.

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III	App III-C7.9.4	C-23	Comment relative to Boxed DOE question. The correction factors should be related to the overall risk of the site. Example if all the source control LID measures were interconnected and the grades allowed for an overflow of the entire site (even though it isn't needed per the calculations) to a large green belt dispersion area, I would be less worried about correction factors. The other extreme is if the site has local depressions and the function of one LID facility is the difference to overflow into a house, I would be more worried about correction factors. I would be worried about too much averaging of infiltration rates. Soils can vary on a site. The topography can also vary and this may impact the gradient to the groundwater table thus varying the infiltration rate.	
III	App III-C7.9.5	C-24	Modeling of Multiple Rain Gardens should be done with much caution with my same comments to DOE's question in C7.9.4 on correction factors and averaging of pilot tests.	A better way may be to allow modeling of the worst case for multiply rain gardens to minimize design and review.
III	App III-C7.10	C-26	I am worried about using this or allow, Estimating Runoff Losses in Road Base Material volumes that are Below Surrounding grade". I would be interested in seeing test results of projects that have used this. Would the base depth need to be in addition to what is need for the structural support of the pavement and for freeze/thaw concerns? Would the entire road have to be in a cut or could one edge that would use the base for runoff loss be in a cut and the opposite edge be in a fill? What system of drainage is needed to assure the runoff gets to the base? For a rural location it is typical that we day light the base into the ditch; is this adequate for use of the base for runoff loses?	Great idea, but I have too many questions to support the best available science, unless I can see test results including long term impacts to the road pavement and have some details relative to construction. Delete the section.

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V	5.3.1	5-16	I have used an amended soil mix that in addition to sand and compost had about a third of topsoil. This mixture I am sure meets BMP T5.13, but the results is that the mixture completely sealed off a treatment pond.	Do not give the credit for pasture when meeting BMP T5.13 or refine the mix to more simulate the improved specification for amended soil in bio-retention facilities. Or do you have better documentation that what is proposed is conservative?
V	BMP T5.30	5-21	BMP T5.30 Full Dispersion needs for roadways to include the dispersion criteria relative to soil types as contained in Vol III 7.2.4 page C-9	Include the dispersion criteria relative to soil types as contained in Vol III 7.2.4 page C-9
V		7-7	Definition of bioretention swale needs to increase the typical depth.	Change the typical depth of a bioretention swale to 6-24 inches.
V		V-12&13	Bioretentions side slopes, bottom width and depth criteria needs clarification/changing. It seems that the side slopes can be greater than 3:1 because there is support for rock walls. And the reference to 3:1 is for planting. Is there any concern about slopes for pedestrian safety and how does this relate to allowed depth? I have concerns for relatively narrow roadways with sheet flow into the swale, the need for a two foot bottom width (I have built many of these and never had a problem with channelizing and the modeling can support a “V” shape)? Change the maximum recommended ponding depth to at least 24 inches. If we are encouraging LID for source control that would include flow control we need to make bioretention more desirable as a design element. Water would rarely be at the 24 inches unless it is an extreme event and this depth should not be considered a drowning concern and this depth can meet the modeling criteria.	Allow a 30 inch depth (6-inche free board if dispersion overflow is not allowed) with 3:1 only on the side of pedestrian usage and eliminate the minimum bottom width.
V		7-24	For Determining subgrade infiltration rates for swale bioretention, 50 foot spacing of small scale test sites should be conditioned unless wider site locations indicate similar material (I recall better working in Vol III appendix C.	Spacing for small scale PIT test may be increase if consistent material is found.

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V		7-24	Determining Bioretention soil Mix Infiltration Rates- Clarification needs to be given on the amended soil infiltration reduction factor for long linear swale projects. I feel that there will or should be an increase use of these facilities to comply with source control, but a segment of the facility would be more representative of a needed correction factor than the total impervious and other areas.	For Bioretention swales use the representive tributary area for a 100 foot (some more thought may be appropriate for this length) length to determine the tributary area in selecting the correction factor.
V		7-26	CAVFS Application – I am not sure what the new CAVFS "Element" in the new model does. For small tributary areas even up to half of a rural road crowned section, particularly where overflow risk is small we have been using and modeling CAVFS to include flow control by varying the depth and length.	Include flow control in the application and expand the design criteria if necessary from the new model "Element".