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October 13, 2010

Arne Anselm
Water Quality Manager
Ventura County Watershed Protection District

RE: Ventura County Technical Guidance Manual Comments

Dear Mr. Anselm,

Thank you for the opportunity to comment on the September 27, 2010 draft of the Ventura County Technical Guidance Manual (TGM). Although the complexity and length of the document is daunting, it does an excellent job simplifying the permit compliance process. The addition of a "biofiltration" option in the New Development and Redevelopment section of the permit was crucial since it provides a viable means of stormwater management on sites where infiltration is infeasible and where there is no demand for harvested rainwater. However, the interpretation of the term "biofiltration" and subsequent selection criteria in the Technical Guidance Manual is a blatant violation of the Maximum Extent Practicable Standard.

As the TGM notes in its definition of "Maximum Extent Practicable", CWA §402(p)(3)(B)(iii) requires that municipal permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable". This goal is also appropriately listed first in the statement of TGM goals in section 1.1. The definition of MEP was addressed by Elizabeth Jennings, Senior Staff Council for the SWRCB in a memo dated February 11, 1993, entitled "Definition of Maximum Extent Practicable". The crux of the definition is as follows:

> "To achieve the maximum extent practicable standard, municipalities must employ whatever Best Management Practices (BMPs) are technically feasible (i.e., are likely to be effective) and are not cost prohibitive. The major emphasis is on technical feasibility. Reducing pollutants to the maximum extent practicable means choosing effective BMPs, and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, or the BMPs would not be technically feasible, or the cost would be prohibitive."

The TGM and NPDES permit properly mandate that retention BMPs be implemented to the maximum extent technically feasible prior to the consideration of BMPs that allow some discharge of stormwater runoff from the water quality design storm. Retention is clearly the most effective BMP. However, limiting so called "treat and release" BMPs to biofiltration forces site designers to exhaust options for implementation of some inferior vegetated BMPs prior to allowing consideration of more effective BMPs that are not vegetated. Specifically, vegetated swales and filter strips are included as biotreatment BMPs and as such, their use is prioritized over media filters which are not included as acceptable means of reducing effective impervious area. This is a blatant contradiction of BMP performance research from within California and around the Nation which consistently shows that media filters are more effective than swales and strips in removing most common stormwater pollutants.

The International BMP Database includes numerous swale, strip and media filtration performance studies from California as well as other locations. A recent summary document describing the performance of "biofilters" and "media filters" can be found at:
http://www.bmpdatabase.org/BMPPerformance.htm

It shows that media filters outperform biofilters for most conventional pollutants. In fact, swales and strips are more likely to increase downstream loading of nutrients, bacteria, pesticides and herbicides. Depending on irrigation

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efficiency, they may also contribute to dry weather runoff. The TGM accurately notes that dense scour resistant vegetative cover is required for proper performance. Such vegetation is likely to increase demand for irrigation water, fertilizer and herbicides, especially if turf is specified as allowed in the TGM. Conventional swales and strips are hardly climate appropriate BMP choices.

On the positive side, swales and strips may provide some runoff volume reduction benefit, but that benefit is not reliable given irrigation inputs and the back-to-back nature of rainy season storm events in Ventura County. If soils are amended to increase retention capacity, the proper place to take design credit would be under the hydrologic source control provision.

Simply put, including swales and strips as acceptable biofilters and requiring that they be used even where media filters are technically feasible and not cost prohibitive violates the MEP standard.

There are at least two possible remedies:

1. Remove swales and strips from the biofiltration category and place them in the treatment control section of the manual.
    a. Biofiltration designs, like the BIO-1 and BIO2 options in the TGM, that force water through a media bed are superior in performance to vegetated filter strips and swales. Therefore, their preference over swales and strips is defensible. However, it is not clear that such designs, for example the planter box design in the TGM, outperform non-vegetated media filters. Putting swales and strips in the treatment control section will require site designers to make a performance based BMP selection. Hydrologic source control credit would potentially be available for swales and strips.

2. Retain swales and strips as biofiltration options. Add a provision allowing media filters or other BMPs that are at least as effective as swales and strips to be used where the entire stormwater design volume cannot be retained or treated by bioretention with underdrains (BIO1)or planter boxes (BIO2). These equally or more effective options must be allowed without triggering off-site mitigation requirements.

Justifying the exclusion of highly effective BMPs on the basis that they don't fit the permit's definition of "biofiltration" is unacceptable. The permit does not define biofiltration. While the permit requires that mitigation goals be met through the use of low impact development techniques to the maximum extent practicable, this obligation is subservient to the CWA directive to reduce the discharge of pollutants to the maximum extent practicable. It would seem to be less egregious to take an expansive view of "biofiltration" than to blatantly violate the Clean Water Act.

Biofilter Sizing

Swales, Strips and Proprietary Biotreatment systems are typically designed as rate based BMPs. The fact sheets for these BMPs include rate based sizing only. Yet the Permit and TGM seems to only allow volume based sizing for "biofiltration" BMPs. Sizing guidance for rate based biotreatment systems should be given, with particular attention to ensuring that the amount of runoff treated is equivalent to what would be treated using the water quality volume x 1.5 as is required for other biotreatment. Currently the rate based sizing guidance in the TGM is based on using a rainfall intensity of 0.2 inches per hour. That intensity should be increased to at least 0.3"/hr for biofiltration BMPs.
It is also important to note that biotreatment BMPs are likely to serve small catchment areas with a time of concentration much shorter than one hour. A catchment area threshold should be given where it is allowable to use the 0.2"/hr default intensity without an actual calculation of the appropriate rainfall intensity using the actual time of concentration and local rainfall intensity distribution. To complete this analysis would require the analysis of historical rainfall records recorded at less than 60 minute intervals. It would be helpful if the TGM provided a table or graph of

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more appropriate design storm intensities corresponding to catchment area size or time of concentration for use in sizing small distributed rate based treatment BMPs.

Proprietary Product Information

CONTECH supplies a wide variety infiltration, filtration, rainwater harvest and pretreatment systems, many of which are included in the draft TGM. As you update the TGM, please note the following CONTECH products and their suggested placement within the manual:

Please add Perforated Corrugated Metal Pipe (CMP) to the list of infiltration products in Table 6-15 in section INF-6. Sample CMP photos are attached to this letter. Additional product information can be found at: http://www.contech-cpi.com/Products/StormwaterManagement/SubsurfaceInfiltration/CMPDetentionandInfiltrationSystem.aspx

Both the CON/SPAN and StormTrap photos on page 6-73 are detention designs with a solid floor. An infiltration design would have concrete strip footings with a gravel floor. A sample CON/SPAN photo is attached to this letter.

Please add the Drywell StormFilter to the list of infiltration products in Table 6-15 in section INF-6 and to section INF-4. A sample drywell stormfilter photo is attached to this letter. Additional product information can be found at: http://www.contech-cpi.com/Products/StormwaterManagement/SubsurfaceInfiltration/DryWellStormFilter.aspx

Please add the UrbanGreen BioFilter by CONTECH to the list of proprietary biofilters in table 6-21.
A sample UrbanGreen BioFilter photo is attached to this letter. Supplemental product information is available at: http://www.contech-cpi.com/Products/StormwaterManagement/Biofiltration/UrbanGreenBioFilter.aspx

Thank you for accepting these comments. I look forward to reviewing the next Technical Guidance Manual draft. In the mean time, please let me know if you have any questions.

Sincerely,

Vaikko P. Allen II, CPSWQ, LEED-AP
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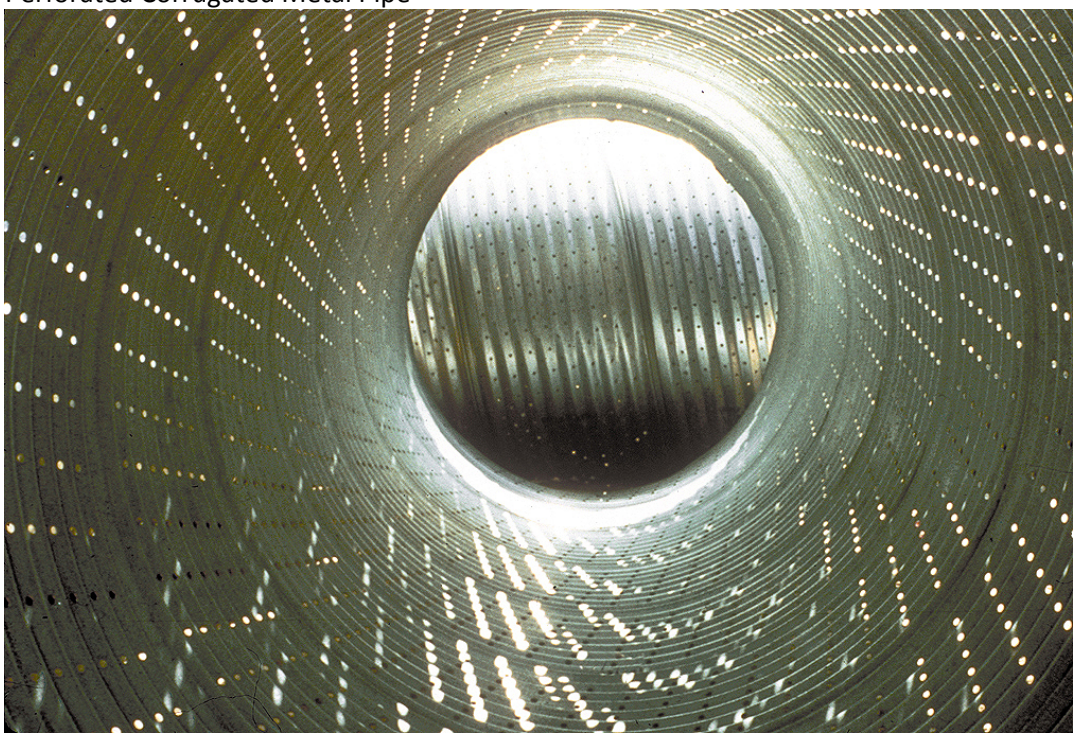
Perforated Corrugated Metal Pipe



Perforated Corrugated Metal Pipe

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Perforated Corrugated Metal Pipe Infiltration System

CON/STORM Infiltration System – Miramar College

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Camp Pendleton – Chambermaxx Infiltration

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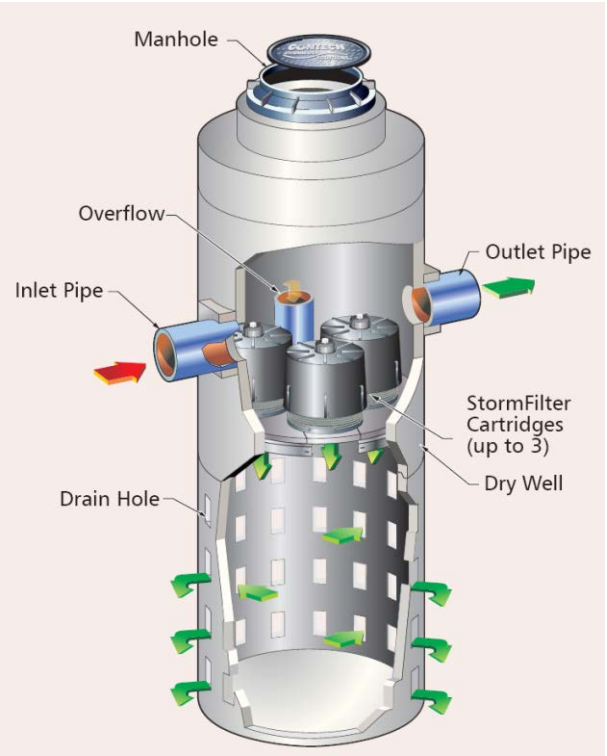
Camp Pendleton – Chambermaxx Infiltration

StormFilter Drywell



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UrbanGreen BioFilter