

**Environmental Resources Technical Advisory Committee
Recommendations to the
Capital Area Regional Planning Commission**

Background

On October 8, 2009, the Capital Area Regional Planning Commission (CARPC) requested that its Environmental Resources Technical Advisory Committee (TAC) convene to provide technical recommendations on a more stringent stormwater runoff volume control standard than the one currently required under NR 151 and Dane County Chapter 14.

The TAC met on November 12, 2009 to review and discuss some of the relevant literature on stormwater volume control as well as some of the volume control standards currently in use around the country. On December 16, 2009 the TAC met to review and discuss modeling results of the runoff volumes resulting from different volume control standards. On January 25, 2010 the TAC met to review and discuss the analysis approach used by Montgomery Associates for the standards recommended in the Badger Mill Creek – Sugar River Study and prepare draft recommendations. On February 22, 2010 the TAC met to finalize their volume control standard recommendations.

Discussion

The TAC agrees that without controls, increased volumes of stormwater runoff from impervious surfaces have an adverse effect on receiving waters. The TAC further agrees that the current infiltration (stay-on) standards in NR 151 and Dane County Chapter 14 do not completely mitigate the impacts of increased volumes of stormwater runoff in all cases. The TAC recognizes the potential benefits of a runoff volume control standard to 100% of pre-development volumes, however it has several concerns related to the achievability and the cost versus benefit of adopting a standard of no increase in pre-development runoff volumes. Therefore, the TAC proposes that the CARPC adopt the following volume control standard and that the standard be reevaluated 5 years from the date of adopting this standard.

Recommendations

The TAC proposes that the CARPC adopt a runoff volume control standard for all new Urban Service Area Amendments based on the infiltration standard in Chapter 14 of the Dane County Ordinances [14.51(2)(e)], including prohibitions, with the following revisions:

1. For both residential and nonresidential developments, design practices to control sufficient runoff volume so that post-development stay-on volume shall be at least 90% of the pre-development stay-on volume, based upon average annual rainfall.
2. The runoff curve numbers used in calculating pre-development conditions shall be based on the pre-development land uses. For agricultural land, the maximum runoff curve number (RCN) used in calculating pre-development conditions shall be 51 for hydrologic soil group (HSG) A, 68 for HSG B, 78 for HSG C, and 83 for HSG D.
3. If when designing appropriate volume control systems, more than two percent (2%) of the site is required to be used as effective infiltration area, the applicant may alternately design infiltration systems and pervious surfaces to meet or exceed the annual pre-

development recharge rate. The annual pre-development recharge rate shall be determined from the Wisconsin Geological and Natural History Survey's 2009 report, *Groundwater Recharge in Dane County, Wisconsin, Estimated by a GIS-Based Water-Balance Model* or subsequent updates to this report, or by a site specific analysis using other appropriate techniques. If this alternative design approach is taken, at least two percent (2%) of the site must be used for infiltration.

4. The standard should be applied on a subwatershed basis and allow credit for best management practices (BMPs) located within the subwatershed of concern and upstream of the point of discharge, including the option of retrofit practices in existing developed areas. The standard can be met with a combination of infiltration, evapotranspiration, and/or reuse BMPs.

The TAC also recommends that CARPC include a public hearing process as part of the adoption of this standard.

The TAC also recommends that the Dane County Board also adopt this volume control standard, so that it is applied to all new development within Dane County and not only to new urban service areas.

The TAC also recommends that CARPC encourage watershed wide standards and inter-municipal cooperation in meeting the standards.

The TAC also recommends that the following additional research efforts, data collection, and modeling be conducted to provide the information needed to further evaluate this issue:

- Use of the SWAT (Soil and Water Assessment Tool) model or other continuous hydraulic/hydrologic/water quality model to evaluate the impacts of runoff volume on the Yahara Lakes watershed This should be a high priority
- Improvements to the SLAMM model to better account for the split between recharge and evapotranspiration that occurs in infiltration / biofiltration practices
- Improvements to RECARGA, SLAMM, or other models to better predict performance during early season and late season infiltration, including frozen ground conditions.
- Information on the performance and life expectancy of infiltration practices currently in place and an assessment of contributing factors if failures occur
- Case studies demonstrating that volume control to 100% of predevelopment volumes can be met by constructed best management practices
- Biological monitoring, such as pre-development and post-development Indexes of Biotic Integrity (IBI)
- An economic analysis of the costs and water quality benefits of runoff volume control