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**SEDIMENT & STORMWATER PROGRAM
REGULATORY GUIDANCE MEMORANDUM
RGM - 6**

Date: July 1, 2026

Title: Extended Detention R_{Pv} Credit and Design Procedures

Synopsis: The DSSR allows for post construction stormwater BMPs to be oversized to provide R_{Pv} credit beyond the regulatory requirement for the drainage area being managed by that BMP. The R_{Pv} extra credit may be used to offset R_{Pv} shortfalls for unmanaged or undermanaged areas of the site. Alternately, it may be used as an offset in accordance with DSSR Section 13.

This RGM provides background on the regulatory requirements, defines how R_{Pv} credit beyond the regulatory requirement is quantified, and establishes procedures for demonstrating compliance and R_{Pv} extra credit specifically for extended detention (ED) BMPs.

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Background

The resource protection goal of the *Delaware Sediment and Stormwater Regulations* (DSSR, 7. Del. Admin Code §5101) is to design sites with best management practices such that the developed runoff of the Resource Protection Event meets a target runoff for the site that is based on an open space condition for pre-development non-forested areas and a woods condition for any areas that were forested in the pre-development condition. The Delaware Urban Runoff Management Model, DURMM, computes the target runoff goal for sites based upon pre and post land cover conditions considering the hydrologic soil group within the limit of disturbance (LOD).

For runoff reduction BMP designs, such as infiltration, runoff to be managed is capped at 1". In accordance with DSSR §11.10.2, §11.10.6.2.1 and §11.13.6.1, detention practices and wet ponds receive full runoff reduction credit and compliance for practices that provide 48-hour extended detention of the full R_{Pv}. These extended detention practices may be wet extended detention ponds, dry extended detention basins, or underground extended detention facilities. For the purposes of this RGM, all extended detention BMPs providing 48-hour extended detention will be referenced as ED practices.

The DSSR §5.2.3.1.4 allows for BMPs that treat more runoff than required to meet the target runoff goal to generate R_{Pv} credit that can be used to manage other site LOD areas that are unmanaged. This RGM will clarify how DURMM computes the target runoff, compliance, extra credit and the extra credit rate and provide procedures for demonstrating compliance or extra credit for ED practices.

Definitions

Compliance Rate - The allowable peak release rate from an ED practice, in units of cubic feet per second, derived from the Resource Protection volume in units of cubic feet discharged over 48 hours, not exceeding five times the average discharge rate.

Credit – A volume in units of cubic feet, generated by a BMP or by impervious reduction, that meets the volume required for compliance.

Extra Credit – A volume in units of cubic feet, generated by a BMP or by impervious reduction, that exceeds the volume required for compliance and may offset unmanaged or partially managed areas of the LOD.

Extra Credit Rate – The allowable peak release rate from an ED practice, in units of cubic feet per second, for extra credit which is derived from the volume generated from the Weighted Target Runoff discharged over 48 hours, not exceeding five times the average discharge rate.

Weighted R_{Pv} – The depth of runoff, in inches, which represents the developed site runoff in the post condition, considering the weighted hydrologic soil group. This runoff value includes only the area within the LOD.

Weighted Target Runoff – The depth of runoff, in inches, which represents the developed site runoff goal of open space, woods, or impervious considering hydrologic soil group and the pre-development condition. This runoff value includes only the area within the LOD.

Computing RPv Credit and Extra Credit for ED Practices

DURMMv2.6 incorporates a calculated value for the compliance rate and extra credit rate as RPv Tab Steps 5.4 and 5.5, respectively.

The compliance rate, which is the Resource Protection volume discharged over 48 hours, not exceeding five times the average discharge rate, is based on runoff from the full drainage area to the ED practice using the following equation to result in units of cubic feet per second:

$$Q_{Compliance}(cfs) = 5 \times \left(\frac{RPv \text{ Runoff Volume } (cf)}{172800 \text{ (sec)}} \right) \quad \text{Equation 1}$$

The extra credit rate, which is the volume generated from the Weighted Target Runoff discharged over 48 hours, not exceeding five times the average discharge rate, is based on runoff from the LOD drainage area to the ED practice using the following equation:

$$Q_{Extra}(cfs) = 5 \times \left(\frac{\text{Weighted Target Runoff } (ft) \times \text{Combined LOD } (sf)}{172800 \text{ (sec)}} \right) \quad \text{Equation 2}$$

RPv credits for ED practices are apportioned based on the design release rate as follows:

$$Q_{Design} > Q_{Compliance}, \text{ Credits } (cf) = 0 \text{ (cf), noncompliant}$$

$$Q_{Design} \leq Q_{Compliance}, \text{ Credits } (cf) = RPv \text{ Shortfall } (cf), \text{ compliant}$$

$$Q_{Design} \leq Q_{Extra}, \text{ Extra Credits } (cf) = (\text{Weighted RPv } (ft) * \text{Combined LOD } (sf)) - RPv \text{ Shortfall } (cf)$$

OLOD Exclusion for ED Practices

OLOD is excluded from computing the RPv Extra Credit Rate. Inclusion of OLOD in the RPv Extra Credit Rate calculation limits the treatment time proportional to the total volume as a higher release rate will result. Conversely, a release rate based on LOD extends the treatment time in the ED practice as more OLOD is accepted.

Extended Detention Design Procedures

DURMMv2.6 integrates a workflow for ED practices to calculate the RPv credits generated based on the design release rate. To demonstrate extra credit for ED practices, complete DURMMv2.6 for the BMP catchment area referring to the following steps in the RPv tab:

- Step 5.4: The Compliance Rate is calculated upon selection of the appropriate ED practice.
- Step 5.5: The Extra Credit Rate is calculated upon selection of the appropriate ED practice.
- Step 5.6: The RPv peak discharge rate from the hydrologic modeling software is entered into the green input cell.
- Step 5.7: Indicates if compliance for the drainage area has been met for the appropriate ED practice.
- Step 5.8: Lists any extra credit generated from the ED practice. Extra credit is available only when the design discharge rate is less than or equal to the computed Extra Credit Rate.

As with runoff reduction BMPs, the DURMMv2.6 Report Tab incorporates the ED practice management provided in line 40, in units of cubic feet. This allows the same entry into the RPv Summary Table for runoff reduction practices and ED practices. The RPv Summary Table will incorporate the appropriate values generated from the ED practice when analyzing the overall project compliance.

In addition to meeting the compliance and/or extra credit rate, ED practice design must also comply with DSSR §5.2.3.2 as follows:

If additional measures are necessary to manage the remainder of runoff from the RPv to achieve the pre-development runoff rate from the RPv, then additional BMPs shall be utilized to achieve the pre-development runoff rate.

Alternatives

The Compliance Rate may be manually calculated to demonstrate compliance within a particular drainage area in accordance with Equation 1, above. However, the pursuit of extra credit from ED practices will not be accepted without the use of BMP drainage area level DURMMv2.6.