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## Technical Memo

### **City of Topeka Stormwater Management**

**Date: November 9, 2020**

**Subject: Value Rating for Catch Basin Insert BMPs**

The City of Topeka adopted the Mid-America Regional Council and American Public Works Association Manual of Best Management Practices for Stormwater Quality, October 2012 Edition (MARC Manual). The MARC Manual provides guidance for planning, design, and implementation of stormwater Best Management Practices (BMP's) for land development activities. The manual addresses the need to control the volume and quality of stormwater discharges from developed sites which are crucial requirements for protecting human life and property, maintaining water quality in receiving streams, supporting the City's regulatory requirement obligations for its Municipal Separate Storm Sewer System (MS4) program under the Clean Water Act and for creating more environmentally sensitive site designs. It also provides criteria for evaluating water quality impacts and how to select BMP's most appropriate for mitigating those impacts.

One BMP type discussed at length in the manual is a catch basin insert. These BMP's generally consist of a solid frame mounted inside a stormwater inlet that holds a filter or fabric bag that is used to remove trash, debris, and coarse sediment from runoff. It is a functional and applicable Water Quality Treatment System that is commonly proposed and used in Topeka, Kansas. It is often included as the first step in a treatment train of BMP's prior to conveyance to a detention or additional water quality BMP. Since many sites already require a formal runoff collection system, the addition of catch basin inserts to already proposed inlets can offer a space-efficient and economical approach to pretreatment.

Table 4.4 of the MARC Manual establishes Value Ratings (VR) for several common classes of structural stormwater BMP's, broken down by their effectiveness in meeting four factors recommended by the U.S. Environmental Protection Agency (EPA) including: (1) water quality value, (2) volume reduction, (3) temperature reduction, (4) oils, floatables, and sediment reductions. This manual does not however, specifically address proprietary products such as the ADS Flexstorm Pure Inlet Filter system. Table 4.5 provides a breakdown for establishment of a VR per the above factors to evaluate products/treatments not specifically addressed by Table 4.4. The purpose of this memo is to establish a VR for the Flexstorm Pure Inlet Filters with Post Construction (PC+) style filter bag and to demonstrate the methodology for rating other proprietary catch basin insert systems.

Third party laboratory research was conducted for ADS to document an appropriate Value Rating (VR) for this product so that the development community and design consultants have clear documentation of the application going forward. This memo is intended to establish the Value Rating (VR) of the Flexstorm Inlet Filters when used in the City of Topeka. The City of Topeka does not endorse the selection of any particular proprietary product brand but rather acknowledges that products that have undergone device testing to

evaluate and measure removal performance may similarly demonstrate compliance with the requirements of the BMP VR methodology.

While the City has accepted a maximum VR of 5.0 for the specific ADS components referenced in this memo, the maximum VR allowed by the MARC Manual rating system for proprietary BMP products, such as catch basin insert systems, is between 2.0 and 5.0 depending on the application. The following criteria will be evaluated when determining the VR for other types of catch basin inserts: (1) the development land use, (2) the influent hydraulics and drainage area treated by each insert, (3) whether the product testing results are based on conditions similar to the proposed BMP installation, and (4) whether the inserts are used as part of a BMP treatment train. In addition, the VR will be dependent on an aggressive maintenance schedule, which should be clearly addressed in the Operation and Maintenance Plan.

#### A. Water Quality Value Rating System

Reviewing the “Water Quality Value” column in Table 4.4, the only values of 4 or higher given in the MARC Manual are attributed to vegetated surfaced products such as Rain Gardens, Infiltration Basins/Trenches, Extended Detention Wetlands, or sand filter practices. Pervious pavement and other propriety systems have a maximum value of 3.0 in this category, based on the perceived intent of the MARC Manual to reward practices that utilize vegetation to improve water quality, in conjunction with other treatment mechanisms, with the highest rating in this category. Third party research supplied by ADS demonstrates an effluent median TSS concentration of 15 mg/L, therefore; a VR credit of 3.0 is deemed most appropriate for the Flexstorm Inlet Filters. In the absence of approved device testing performance data, the VR credit is 1.0.

WATER QUALTY VALUE RATING = up to 3.0 (ADS Flexstorm)

1.0 (no performance data)

#### B. Volume Reduction Value Rating System

This category is most dependent on a BMP’s ability to adequately infiltrate runoff. Catch basin inserts provide no appreciable volume reduction.

VOLUME REDUCTION VALUE RATING = 0.0

#### C. Temperature Reduction Value Rating

Temperature reduction of runoff can be achieved through infiltration, storage away from sunlight, or prolonged hydraulic residence time. Catch basin inserts provide no appreciable temperature reduction.

TEMPERATURE REDUCTION VALUE RATING = 0.0

#### D. Oils/Floatables Reduction

The ADS Post Construction (PC+) style filter bag mesh has a maximum opening size of 1 mm allowing it to capture floatables larger than that size. In addition, performance testing showed a total petroleum hydrocarbon (TPH) removal rate of 96 to 99%. This product has been shown to effectively capture floatables and sediment and has a good removal efficiency of hydrocarbons.

Therefore the “FULL” VR credit of 2.0 will be given. In the absence of approved device testing performance data, the VR credit is 1.0.

OILS/FLOATABLES/SEDIMENT VALUE RATING = up to 2.0 (ADS PC+)

1.0 (no performance data)

<b>VALUE RATING FOR CATCH BASIN INSERT SYSTEMS</b>			
		ADS	Other Insert Systems
A	WATER QUALITY	≤ 3.0	≥ 1.0
B	VOLUME REDUCTION	0.0	0.0
C	TEMPERATURE REDUCTION	0.0	0.0
D	OILS/FLOATABLES/SEDIMENT REDUCTION	≤ 2.0	≥ 1.0
	TOTAL VR	≤ 5.0	≥ 2.0