State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Nonpoint Pollution Control
Division of Water Quality
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CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

January 11, 2017

David Scott, CPSWQ
General Manager
Hydro International
94 Hutchins Drive
Portland, ME 04102

Re: MTD Laboratory Certification
Up-Flo® Filter by Hydro International
Off-line Installation

TSS Removal Rate 80%

Dear Mr. Scott:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Hydro International has requested a Laboratory Certification for the Up-Flo® Filter System.

This project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advanced Technology" dated January 25, 2013. The applicable protocol is the "New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device" dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the afore-mentioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix for this device is published online at http://www.njcat.org/verification-process/technology-verification-database.html.

The NJDEP certifies the use of the Up-Flo® Filter by Hydro International at a TSS removal rate of 80%, when designed, operated and maintained in accordance with the information provided in the Verification Appendix and subject to the following conditions:

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5. The MTFR is calculated based on a verified loading rate of 1.264 gpm/sf of effective filtration treatment area.

2. The Up-Flo® Filter shall be installed using the same configuration as the unit verified by NJCAT, and sized in accordance with the criteria specified in item 6 below.

3. This device cannot be used in series with another MTD or a media filter (such as a sand filter), to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

4. Additional design criteria for MTDs can be found in Chapter 9.6 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual which can be found on-line at www.njstormwater.org.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the Up-Flo® Filter, which is attached to this document. However, it is recommended to review the maintenance website at http://www.hydro-int.com/sites/default/files/nj_uff_inspection_and_maintnenance.pdf for any changes to the maintenance requirements.

6. Sizing Requirements:

   The example below demonstrates the sizing procedure for an Up-Flo® Filter.

   Example: A 0.25-acre impervious site is to be treated to 80% TSS removal using an Up-Flo® Filter. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs or 354.58 gpm.

   The selection of configuration for use in the Up-Flo® Filter is based upon both the MTFR and the maximum inflow drainage area. It is necessary to select the configuration using both methods and to rely on the method that results in the larger configuration determined by the two methods.

   Inflow Drainage Area Evaluation:

   The drainage area to the Up-Flo® Filter in this example is 0.25 acres. Based upon the information in Table 1 below, the following minimum configuration is required in an Up-Flo® Filter to treat the impervious area without exceeding the maximum drainage area:

Model Size UFF-ZV-19-285R with MTFR of 285 gpm and Maximum Allowable Inflow Drainage Area of 0.264 acre

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was determined based on the following:

time of concentration = 10 minutes
i=3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)
c=0.99 (runoff coefficient for impervious)
Q=ciA=0.99x3.2x0.25=0.79 cfs=0.79x448.83 gpm=354.58 gpm

Based on a flow rate of 354.58 gpm, the following minimum configurations are required in an Up-Flo® Filter System to treat the impervious area without exceeding the MTFR:

Model Size UFF-ZV-38-285R with MTFR of 570 gpm and Maximum Allowable Inflow Drainage Area of 0.528 acre

The MTFR Evaluation results will be used since that method results in the higher minimum configuration determined by the two methods.

The sizing table corresponding to the available system models are noted below:

Table 1 Up-Flo® Filter Configurations and NJDEP Sizing Table

Configuration	Model Size	Number of Filter Modules	Max. Filtration Rate[1] (gpm)	Minimum Sedimentation Area [1,2] (sq.ft.)	Minimum Wet Volume [1,2] (cu.ft.)	Total Filtration Area [1] (sq.ft.)	Total Mass Capture [1] (lbs)	Maximum Allowable Inflow Area [1] (Acres)
Manhole	UFF-MH-285R	6	90	12.57	31.30	71.22	50.0	0.083
Vault	UFF-ZV-19-285R	19	285	39.79	99.12	225.5	158	0.264
Vault	UFF-ZV-38-285R	38	570	79.59	198.2	451.1	317	0.528
Vault	UF-ZV-57-285R	57	855	119.4	297.4	676.6	475	0.792

[1] Refer to Table A-1 of NJCAT Verification Report dated December 2016: UFF Design Specifications for the design parameters
[2] The precast structure housing the filter modules shall have at least the "Min. Sedimentation Area"

Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all of the items identified in Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Shashi Nayak of my office at (609) 633-7021.

Sincerely,

James J. Murphy, Chief
Bureau of Nonpoint Pollution Control

Attachment: Maintenance Plan

cc: Chron File
Richard Magee, NJCAT
Vince Mazzei, NJDEP - DLUR
Ravi Patraju, NJDEP - BES
Gabriel Mahon, NJDEP - BNPC
Shashi Nayak, NJDEP – BNPC