State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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DIVISION OF WATERSHED PROTECTION AND RESTORATION
BUREAU OF NJPDES STORMWATER PERMITTING & WATER QUALITY MANAGEMENT
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SHAWN M. LATOURETTE
Commissioner

November 17, 2023

Arthur Schwidder
Chairman and Chief Technical Officer
Upstream Technologies, Inc.
5201 East River Road, Suite 303
Fridley, MN 55421

Re: MTD Lab Certification
SAFL Baffle Stormwater Treatment Unit (SAFLB)
Online Installation

TSS Removal Rate 50%

Dear Mr. Schwidder:

The Stormwater Management rules under N.J.A.C. 7:8-5.2(f) and 5.2(j) 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). Upstream Technologies, Inc. has requested a Laboratory Certification for the SAFL Baffle Stormwater Treatment Unit (SAFLB).

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated January 25, 2013. The applicable protocol is the "New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" dated January 1, 2021.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned 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 (dated October 2023) for this device is published online at http://www.njcat.org/verification-process/technology-verification-database.html.

The NJDEP certifies the use of the SAFLB by Upstream Technologies, Inc. at a TSS removal rate of 50% when designed, operated and maintained in accordance with the information provided in the Verification Appendix and 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.

2. The SAFLB stormwater treatment device shall be installed using the same configuration reviewed by NJCAT and shall be sized in accordance with the criteria specified in item 6 below.

3. This SAFLB stormwater treatment 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 11.3 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual which can be found on-line at https://dep.nj.gov/stormwater/.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the SAFL Baffle Stormwater Treatment Unit. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at https://www.upstreamtechnologies.us/docs/SAFL_Baffle_Operations_and_Maintenance_Manual_NJDEP.pdf for any changes to the maintenance requirements.

6. Sizing Requirements:

   The example below demonstrates the sizing procedure for the SAFL Baffle Stormwater Treatment Unit:

   Example: A 0.25-acre impervious site with a slope of 5% is to be treated to 50% TSS removal using a SAFL Baffle Stormwater Treatment Unit (SAFLB). The hydraulically most distant point to the inlet of the SAFLB is 110 feet. The site is located in an area for which the projected 2-year storm rainfall depth was calculated to be 3.84 inches.

   Maximum Treatment Flow Rate (MTFR) Evaluation:

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

   CN = 98 (Curve Number for impervious)
   Dimensionless Unit Hydrograph (DUH) = SCS Standard DUH (peak rate factor of 484)
   Time of concentration = 0.8 minutes
   Q = 0.77 cfs

   Given the site runoff is 0.77 cfs and based on Table 1 below, the SAFL Baffle Stormwater Treatment Unit Model 108 x 46 with an MTFR of 0.87 cfs would be the smallest model approved that could be used for this site that could remove 50% of the TSS from the impervious area without exceeding the MTFR.

   The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the Verification Appendix under Table A-1.

Table 1: SAFL Baffle Models and Associated MTFRs

SAFLB Model	Diameter (ft)	Maximum Treatment Flow Rate[1] (cfs)	Effective Treatment Area (sq. ft.)	Hydraulic Loading Rate (gpm/sq. ft.)
60 x 36	5	0.27	19.6	6.1
72 x 36	6	0.39	28.3	6.1
84 x 46	7	0.53	38.5	6.1
96 x 46	8	0.69	50.3	6.1
108 x 46	9	0.87	63.6	6.1
120 x 57	10	1.08	78.5	6.1

[1] Maximum Treatment Flow Rate (MTFR) is based on a verified loading rate of 6.1 gpm/ft^2.

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 the items identified in the Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, 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 Lisa Schaefer of my office at lisa.schaefer@dep.nj.gov.

Sincerely,

Gabriel Mahon, Chief
Bureau of NJPDES Stormwater Permitting & Water Quality Management
Division of Watershed Protection and Restoration
New Jersey Department of Environmental Protection

Attachment: Maintenance Plan

c: Richard Magee, NJCAT

5201 East River Road, Suite 303
Fridley, MN 55421, 651.237.5123

SAFL Baffle Operation & Maintenance Manual

For NJDEP Certified SAFL Baffle Installations

Operation

The SAFL Baffle is a stainless-steel baffle installed in a concrete structure to capture sediment from stormwater runoff. Once installed, the SAFL Baffle requires maintenance to perform properly.

Maintenance

1. Visual Inspection - Three times per year for first two years, once per year following
2. Sump Cleaning - Once per year, unless visual inspection indicates more frequent cleanings required

Tools Needed

1. Vacuum truck with jet power washer
2. Measuring tape with attached flat disk
3. Rake or broom

Visual Inspection

Visual inspection needs to take place to ensure the SAFL Baffle is functioning properly and should take place 3 times per year for the first two years.

1. Previous Inspections – When was the last time this structure was inspected?
2. Access - Is the structure accessible? If not, remove obstruction.
3. Debris - Is trash or vegetation in the structure? If so, what types of trash or vegetation are present? Is there so much debris that it is difficult to see water? If so, sump cleaning is required
4. Structural Integrity - Push and pull on top of Baffle to insure it is still solidly anchored to the walls. Are there pieces of the Baffle that have become dislodged? Do any parts of the Baffle appear weak, damaged or loose? If so, retighten as needed. If parts are needed, contact Upstream Technologies at 651-237-5123
5. Clogging - Is anything clogging the baffle? If so, what is causing the clogging? Attempt to remove debris stuck to the Baffle with a rake or broom.
6. Sediment Accumulation –Several measurements should be taken to generate an average sediment depth. If average sediment depth is more than 18 inches above the sump floor, the sump needs to be cleaned out. Sump depth is measured from the pipe invert to the sump floor.

Sump Cleaning

Sump cleaning needs to take place to ensure maximum capture of sediment from stormwater and should be performed at minimum, once per year. The structure may need more frequent sump cleaning if sediment is consistently accumulating to more than 18 inches above the sump floor.

1. Vacuum water, debris, and sediment
2. Jet wash debris from Baffle
3. Jet wash any remaining debris and sediment towards vacuum hose