



State of New Jersey

Department of Environmental Protection

Division of Science, Research and Technology
Bureau of Sustainable Communities and Innovative Technologies
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Bradley M. Campbell
Commissioner

Richard J. Codey
Acting Governor

December 22, 2004

James H. Lenhart, P.E.
Senior Vice President
Stormwater Management, Inc. (SMI)
12021-B NE Airport Way
Portland, OR 97220

Re: Extension Approval to Conditional Interim Certification for the Stormwater Management StormFilter[®].

Dear Mr. Lenhart:

The New Jersey Department of Environmental Protection (NJDEP) received your correspondence requesting an extension to the conditional interim certification of the Stormwater Management StormFilter[®] (StormFilter). The expiration date for the current interim certification is December 31, 2004. This interim conditional certification was given in accordance with the Energy and Environmental Technology Verification (EETV) Act at N.J.S.A. 13:1D-134 et seq. After careful consideration, the NJDEP approves the request to extend the conditional interim certification, which will now expire on December 30, 2006.

The conditional interim approval was based on the New Jersey Corporation for Advanced Technology (NJCAT) verification report. According to the report, the StormFilter System, with influent concentrations of 300 mg/l or less and where Total Suspended Solids (TSS) particle sizes are expected to be similar to those tested, should be able to meet the basic treatment goal of 80% removal of TSS. Based on the NJCAT verification report and the recent information submitted by Stormwater Management regarding the analyses from the treatment of four storm events at Greenville Yards, the NJDEP has decided on the following:

- 1) The StormFilter can be used as a stand alone unit for the period of time that the interim certification remains in effect.
- 2) This conditional interim certification is for the current design of the StormFilter, and any modification will require a new review before use.

- 3) All maintenance requirements must be implemented, and any training must be provided for personnel assigned to perform the maintenance, to ensure that the technology functions in accordance with the conditions of this conditional interim certification.
- 4) The StormFilter shall be designed in accordance with New Jersey's water quality standards and SMI's *Product Design Manual Version 3.0 (April 2002)*, or current edition, unless otherwise specified. The design, pretreatment, land use application, and maintenance criteria in SMI's Design Manual must be closely followed.

As part of the interim conditional approval, the StormFilter is currently being field tested, and the results will be analyzed and submitted for consideration in order to receive a final certification from the NJDEP. This phase of testing must satisfy the requirements of the Technology Acceptance and Reciprocity Partnership (TARP) Stormwater Best Management Practice Demonstration Tier II Protocol. For any questions regarding this correspondence, please contact Ravi Patraju of my staff at (609) 292-0125.

Marty Rosen,



Chief, Bureau of Sustainable Communities
and Innovative Technologies

Enclosure

- c: Ernest Hahn, Assistant Commissioner, Land Use Management
Sam Wolfe, Assistant Commissioner, Environmental Regulation
Jeanne Herb, Director, Policy, Planning, and Science
Larry Baier, Director, Watershed Management Program
Narinder Ahuja, Director, Division of Water Quality
Mark Mauriello, Director, Land Use Regulations
Eileen Murphy, Director, Division of Science, Research, and Technology
Rhea Brekke, Executive Director, New Jersey Corporation for Advanced Technology

January 17, 2007

Addendum to the Stormfilter[®] Conditional Interim Certification

The New Jersey Department of Environmental Protection (NJDEP) is in receipt of, and presently reviewing, the Stormfilter[®] manufactured treatment device's Final Verification Report dated December 2006 from New Jersey Corporation for Advanced Technology (NJCAT). The review and evaluation of this verification report serves as a basis for the NJDEP final certification for this device. Therefore, the deadline for the current Stormfilter[®] Conditional Interim Certification has been extended until the NJDEP review of the Final Verification Report has been completed and a Final Certification is issued. Any inquiries regarding the review process can be made through the contact information given in the Conditional Interim Certification letter.

Conditional Interim Certification Findings

**NJDEP Stormwater
Management
Technology Project
Management Team
(PMT):**

Manny Patel, Office of Innovative Technology & Market Develop
Brian McLendon, Division of Water Quality
Madhu Guru, Land Use Regulation, Compliance & Enforcement
Sandra Blick, Division of Watershed Management

Treatment Technology: StormFilter developed by Stormwater Management, Inc. (SMI)

Applicant Information: Stormwater Management, Inc. (SMI)
12021-B NE Airport Way, Portland, OR 97220
800-548-4667
www.stormwaterinc.com
www.njcat.org
www.state.nj.us/dep/dsr/

Description: Stormwater Management Inc. (SMI) has developed an innovative stormwater treatment system called StormFilter. The StormFilter is a passive, flow through, storm water filtration system, improving the quality of stormwater runoff by removing non point source pollutants, including total suspended solids (TSS), oil and grease, soluble metals, nutrients, organics, and trash and debris.

The StormFilter is typically comprised of a vault that houses rechargeable, media-filled filter cartridges. Stormwater from storm drains is percolated through media-filled cartridges, which removes particulates and adsorbs materials such as dissolved metals and hydrocarbons. Surface scum, floating oil and grease are also removed. After passing through the filter media, the storm water flows into a collection pipe or discharges to an open channel drainage way. Inherent in the design of the StormFilter is the ability to control the individual cartridge flow rate with an orifice disk placed at the base of the cartridge. The maximum flow rate through each cartridge can be adjusted to between 5 and 15 gpm.

NJCAT Verified Claims:

Claim 1 - The StormFilter cartridge at 15 gallons per minute (gpm) using a coarse perlite media has been shown to have a TSS removal efficiency of 79% with 95% confidence limits of 78% and 80%, respectively for a sandy loam comprised of 55% sand, 40% silt, 5% clay (USDA) in laboratory studies using simulated storm water.

Claim 2 - The StormFilter cartridge at 7.5 gallons per minute (gpm) using a combination of fine and coarse perlite media has been shown to have a TSS removal efficiency of 71% with 95% confidence limits of 68% and 75%, respectively for a silt loam comprised of 15% sand, 65% silt, 20% clay (USDA) in laboratory studies using simulated storm water.

Claim 3 - The StormFilter cartridge at 15 gpm using CSF[®] leaf media has a TSS removal efficiency of 73% with 95% confidence limits of 68% and 79%, respectively when evaluating field and laboratory data.

Technology Limitations:

- StormFilter is best utilized for the removal of suspended solids in storm water. The StormFilter uses filter cartridges housed in concrete vaults to produce a self-contained storm water filtering system. The design life of the structure is typically 50 years. Cartridge life is guaranteed as long as the maintenance contract is upheld. Typical life of a cartridge has been budgeted at 20 years. Each cartridge is designed

to treat a peak flow of 5 to 15 gpm. Since storm water flows by gravity, the StormFilter typically requires 2.3 feet of head differential between the invert of the inlet and the invert of the outlet.

- Backwater can be a problem if downstream hydraulic calculations are not performed properly. Backwater will reduce the hydraulic potential across the filter reducing flow rate through the cartridge. Backwater may also saturate media for long periods of time.
- Baseflows should be bypassed to ensure proper functioning of the cartridges and the filtration media. If baseflows occur, the filtration media may become exhausted prematurely. This will affect the life of the cartridges and maintenance may be required more often. Low flow bypasses can be installed retroactively.
- Excessive solids loading, hydrocarbon loading, and/or debris should be addressed during the design phase to assess if pretreatment is needed. Heavy solids loading without pretreatment can cause clogging of the cartridges. Maintenance frequency increases if this occurs.
- The StormFilter design incorporates some ponding of water which can be a breeding site for mosquitoes. Also, if the cartridges plug due to inadequate maintenance, additional standing water will result.
- Inspections should be performed during mid-season to determine sediment loading on the system. This involves mobilization to the site, documentation of media and vault conditions and measurements of accumulated sediments. Other inspections are performed during the year if a field crew is in the area of the filter and as time permits.

NJDEP Stormwater Management Technology PMT Recommended Interim Certification Conditions:

Based on NJCAT's verification report entitled "NJCAT Technology Verification, Stormwater Management, Inc., June 2002 the Stormwater Management Technology PMT finds that the StormFilter system, with influent concentrations of 300 mg/l or less and where TSS particle sizes are expected to be similar to those tested, would probably be able to meet the basic treatment goal of 80% removal of Total Suspended Solids (TSS). However, since majority of the performance data was collected in the lab and does not meet Stormwater Best Management Practice Demonstration Tier II Protocol, the following conditions will apply to the interim certification:

1. The StormFilter system will only be approved as part of a treatment train for most projects but allowed as a stand alone structure on some projects if it is proven that no other conventional water quality feature can be incorporated into the design.
2. StormFilter systems shall be designed in accordance with New Jersey's water quality standards and SMI's *Product Design Manual Version 3.0 (April 2002)*, or current edition, unless otherwise specified.
3. A Quality Assurance Project Plan supporting Stormwater Best Management Practice Demonstration Tier II Protocol shall be submitted to OITMD and/or NJCAT within six (6) months from the date of state's interim approval letter.
4. Field evaluation data that is consistent with the Tier II protocol shall be submitted to OITMD and NJCAT by August 2004.
5. The approval letter shall expire by December 2004 unless extended by OITMD.