COMMONWEALTH of VIRGINIA

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July 3, 2014

Mr. Derek Berg
71 US Route 1, Suite F
Scarborough, Maine 04074

Re: Assignment of Percent Removal Efficiencies for Total Phosphorus

Dear Mr. Berg,

Thank you for your submittal of the Manufactured Treatment Device (MTD) Registration Form and supporting documentation for the Contech StormFilter with ZPG Media. The MTD information provided (Appendix A) was reviewed for the purpose of assigning a pollutant removal efficiency for total phosphorus. This review was performed in accordance with the Guidance Memo Number 14-2009 titled "Interim Use of Stormwater Manufactured Treatment Devices (MTDs) to meet the new Virginia Stormwater Management Program (VSMP) Technical Criteria, Part IIB Water Quality Design Requirements." The review process included the analysis of the documents submitted and one additional study performed using the protocol established by the U. S. EPA Environmental Technology Verification (ETV) Program.

The documents submitted provided descriptive information about the Stormfilter device, the maintenance plan, and a performance study. The data provided within the contents of the submitted performance study included drainage area size and land cover, storm event and runoff parameters, event mean concentrations (EMC) of selected nutrients, metals, and sediment, and performance results. In addition, a web search was performed to obtain information about StormFilter that is publicly accessible. The search yielded a performance study conducted in Wisconsin as a cooperative effort among federal, state, and private participants. This study also provided supporting data and performance results for various nutrients, metals and sediment. Both studies reported Total Phosphorus (TP) performance results.

The performance data received was analyzed by calculating the removal efficiencies for each storm event sampled for TP and then computing the mean of the removal efficiencies for that study period. This method of analysis was applied to all data received in order to achieve a consistent analytical process to aid in the assigning of removal efficiencies. A summary of the results is provided in Appendix B.

Consistent with Guidance Memo Number 14-2009, Contech StormFilter with ZPG Media is receiving an EMC percent TP removal efficiency of 45%. As stated in the guidance memo, this

information will be posted on the Virginia Stormwater Clearinghouse website. This MTD and the assigned removal efficiency can be manually added into Virginia Runoff Reduction spreadsheet to demonstrate compliance with Runoff Reduction Method.

If you have any questions regarding this information, please contact Robert E. Cooper, P.E. at (804) 698-4033 or e-mail at Robert.Cooper@deq.virginia.gov

Sincerely;

Fred K. Cunningham
Director
Office of Water Permits

Appendix A-Documents

1) Lake Stevens North Field Evaluation: Stormwater Management Stormfilter with ZPG^{tm} Media
2) The Stormwater Management Stormfilter®-Solution Guide
3) StormFilter Maintenance Guidelines
4) Manufactured Treatment Device (MTD) Registration
5) Environmental Technology Verification Report- Stormwater Source Area Treatment Device-The Stormwater Management Stormfilter® Using ZPG Filter Media-July 2004 EPA/600/R-04/125

Appendix B-Study Results

Data from Lake Stevens North Field Evaluation Report

Storm Date	Influent EMC (mg/l)	Effluent EMC (mg/l)	*Discrete Removal Efficiency (%)
4/8/03	0.117	0.116	N/A
5/15/03	0.233	0.138	41
9/16/03	0.255	0.0851	67
10/06/03	0.239	0.151	37
10/15/03	0.0996	0.0648	35
10/16/03	0.0806	0.0606	25
10/22/03	0.198	0.0592	70
11/10/03	0.0721	0.0392	46
1/22/04	0.0544	0.055	N/A
1/29/04	0.134	0.0549	59
02/03/04	0.0498	0.0368	26
03/06/04	0.119	0.0501	58
		Mean	46

*Efficiency = 100 x (1-Effuent EMC/Influent EMC)

Data from Environmental Technology Verification Report

Storm Date	Influent EMC (mg/l)	Effluent EMC (mg/l)	*Discrete Removal Efficiency (%)
6/21/02	0.14	0.10	29
7/8/02	0.11	0.08	27
8/21/02	0.05	0.04	20
9/2/02	0.10	0.05	50
9/18/02	0.14	0.10	29
9/29/02	0.10	0.03	70
12/18/02	0.33	0.20	39
4/19/03	0.50	0.29	42
5/4/03	0.17	0.08	53
5/30/03	0.20	0.14	30
6/8/03	0.19	0.08	58
6/27/03	0.24	0.19	21
7/8/03	0.16	0.11	31
9/12/03	0.63	0.30	52
9/22/03	0.15	0.10	33
10/14/03	0.15	0.10	33
		Mean	39

*Efficiency = 100 x (1-Effuent EMC/Influent EMC)

The Mean Discrete Removal Efficiency (%) for all data is 42%