



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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September 4, 2014

Mr. Jay Holtz, P.E.
Oldcastle/KriStar Stormwater Solutions
7921 Southpark Plaza, Suite 200
Littleton, Colorado 80120

Re: Assignment of Phosphorus Removal Efficiency for the Perk Filter Device

Dear Mr. Holtz,

Thank you for your submittal of the Manufactured Treatment Device (MTD) Registration Form and supporting documentation for the Perk filter. The MTD information provided (Appendix A) was reviewed for the purpose of assigning a pollutant removal efficiency for total phosphorus (TP). 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 any other publically available reports.

The documents submitted provided descriptive information about the Perk Filter 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 and sediment, and 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, Perk Filter is receiving an EMC percent TP removal efficiency of 50%. 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;

A handwritten signature in cursive script that reads "Fred K. Cunningham".

Fred K. Cunningham
Director
Office of Water Permits

Appendix A-Documents

- 1) KriStar Perk Filter Stormwater Treatment System Performance Monitoring-June 2010
- 2) KriStar Perk Filter Stormwater Treatment System Performance Monitoring Volume 2-Appendices

Appendix B-Study Results

Data from KriStar Perk Filter Stormwater Treatment System Performance Monitoring-June 2010

Storm Date	Influent EMC (mg/l)	Effluent EMC (mg/l)	*Discrete Removal Efficiency (%)
5/2/2009	0.585	0.225	62
5/6/2009	0.174	0.051	71
5/13/2009	0.127	0.048	62
5/18/2009	0.444	0.053	88
8/13/2009	0.314	0.203	35
9/5/2009	0.381	0.154	60
9/19/2009	0.111	0.112	-1
10/2/2009	0.098	0.099	-1
10/17/2009	0.081	0.044	46
10/28/2009	0.034	0.027	21
10/30/2009	0.082	0.057	30
11/16/2009	0.107	0.017	84
11/18/2009	0.072	0.022	69
11/21/2009	0.054	0.02	63
11/25/2009	0.113	0.025	78
12/14/2009	0.464	0.126	73
12/16/2009	0.218	0.063	71
1/12/2010	0.118	0.066	44
1/14/2010	0.067	0.044	34
2/15/2010	1.08	0.043	96
2/23/2010	0.624	0.111	82
2/26/2010	0.162	0.059	64
		Mean Removal Efficiency	56

*Efficiency = $100 \times (1 - \text{Effluent EMC} / \text{Influent EMC})$