



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

June 29, 2015

Mr. John Moll  
CrystalStream Technologies  
2090 Sugarloaf Parkway, Suite 245  
Lawrenceville, GA 30045

Re: Assignment of Percent Removal Efficiencies for Total Phosphorus

Dear Mr. Moll,

Thank you for your submittal of the Manufactured Treatment Device (MTD) Registration Form and supporting documentation for the CrystalClean Separator – Single Vault. 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 CrystalClean Separator – Single Vault. 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, CrystalClean Separator – Single Vault is receiving an EMC percent TP removal efficiency of 25%. 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](mailto:Robert.Cooper@deq.virginia.gov).

Sincerely;

A handwritten signature in blue ink that reads "Fred K. Cunningham".

Fred K. Cunningham  
Director  
Office of Water Permits

## Appendix A-Document

- 1) Environmental Technology Verification Report, Stormwater Source Area Treatment Device-Practical Best Management of Georgia, Inc. CrystalStream™ Water Quality Vault Model 1056

## Appendix B-Study Results

Table 1: Efficiency Assessment of Total Phosphorus (TP)

Storm Date	Inlet (mg/l) TP	Outlet (mg/l) TP	*Removal (%)
3/26/03	0.02	0.14	-600**
5/5/03	0.58	0.14	76
1/25/03	0.22	0.19	14
4/13/03	0.3	0.25	17
4/26/04	0.21	0.19	10
4/30/04	0.1	0.11	-10
6/25/04	0.17	0.15	12
6/28/04	0.1	0.08	20
6/30/04	0.31	0.24	23
7/12/04	0.29	0.19	34
7/17/04	0.2	0.17	15
7/25/04	0.23	0.1	57
8/5/04	0.26	0.08	69
8/12/04	0.12	0.12	0
8/21/04	0.23	0.13	43
			27***

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

\*\* Not included

\*\*\* Average efficiency