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MASTEP Technology Review

Technology Name: CrystalStream Water Quality Vault

Studies Reviewed:

- Environmental Technology Verification Report - Stormwater Source Area Treatment Device – Practical Best Management of Georgia, Inc. CrystalStream™ Water Quality Vault Model 1056, 2005

Date: January 26, 2008

Reviewer: Jerry Schoen

Rating: 3

Brief rationale for rating: This field study encountered difficulties with flow measurement (discussed below and in the report) which introduce uncertainty into pollutant removal efficiency results. The manufacturer's performance claim was stated in terms of pounds of material removed per drainage basin acre per year, whereas the testing agency calculated % removal according efficiency ratio and summation of loads methods.

TARP Requirements Not Met:

- At least 50% of annual rainfall must be sampled (only 14% was sampled)
- Minimum of 15" of precipitation must be sampled (only 7.55" were sampled)

Other Comments:

- Difficulty with flow monitoring (discrepancy between inflow and outflow CFS measured) makes it difficult to determine validity of removal efficiency calculated by summation of loads method. A significant discrepancy was observed between inlet and outlet flows. These occurred both before and after the installation of a trash basket part-way through the study. The installation of the trash basket may have created differing conditions in the first and second part of the study, further complicating evaluation removal efficiency.
- A significant discrepancy was also observed between TSS and SSC results.
- The report contains a detailed discussion of quality control procedures and results. Although MASTEP would prefer to see more quality control tests conducted, the QC plan was approved by EPA. There were some problems with performance on blanks and precision, but this was not deemed critical.
- The report contains a section of vendor-supplied information (chapter 8), which was not verified by the testing or verification organizations. In this section, the vendor reports on maintenance and cleaning operations during the study and provides data showing the weight of trash collected during the study. The methods for collecting and calculating weights are not given in detail. Some results are estimated based on average weights of fiber filter that was weighed early in the study, but not in later events. This vendor-supplied data shows trash removal well above performance claims.