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MASTEP Technology Review

Massachusetts Stormwater Evaluation Project

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Technology Name: Stormvault

Studies Reviewed: Fassman, Elizabeth A. 2006. Improving Effectiveness and Evaluation Techniques of Stormwater Best Management Practices. *Journal of Environmental Science and Health Part A*, 41: 1247-1256.

NJCAT Technology Verification of the Stormvault Mitigation System by CON/SPAN. December 2005.

NJCAT Technology Verification StormVault, Contech Stormwater Solutions, Inc. August 2007.

Testing of the Jensen Precast Stormvault. Albemarle County Office Building Parking Lot Charlottesville, VA. 2001 Monitoring Report. Prepared by Wright Water Engineers, INC. Denver, CO March 2002.

Testing of the Jensen Precast Stormvault. Paratransit Bus Lot Sacramento, CA. 2001 Monitoring Report. Prepared by Wright Water Engineers, INC. Denver CO and CH2M Hill Sacramento, CA. February 2002.

Date: November 19, 2008

Reviewers: Sarah Titus, Jerry Schoen

Rating: 2

Brief rationale for rating:

The Stormvault was tested at sites in Virginia and California. This review is based largely on testing conducted in Virginia, which was used in the 2005 and 2007 NJCAT reports. Results were reported for 34 qualifying storm events and 19" of rainfall. Most TARP Tier II requirements were met, including antecedent dry conditions, storm size, use of rain gauges and autosamplers, particle size distribution, and description of the unit and maintenance procedures. The laboratory certification status was not discussed.

TARP Requirements not met:

- No discussion of a QAPP, QC, or laboratory certification.
- 42% of average annual rainfall was sampled: 50% is required.

Other comments:

- 53% sand 40% silt 7% clay was reported which is close to the recommended soil type.
- Influent flow rates ranged from 0.011-1.33cfs with a mean of 0.272cfs. Two events had peak flow rates of 1.33cfs and 1.011cfs corresponding to 100-125% of the design peak flow rate (1.07cfs). No resuspension was observed in measured effluent and sediment accumulation above the maximum threshold was observed on the day of the maximum peak inflow rate. Otherwise, no documentation of scour testing was provided.
- Median influent TSS for was generally low; a median of 55mg/l for the 34 qualifying events, with only 7 events producing influent concentrations of 100 mg/l or higher. This is less than the recommended 100 – 300 mg/l influent range. However, low influent concentrations are considered harder to treat; under typical influent TSS conditions (i.e. 100 – 300 mg/l), this unit, if properly sized, may provide better treatment efficiency than results obtained in these studies.
- Performance testing conducted in Virginia evaluated the Stormvault in two different configurations: the first was configured to have a 15 minute drawdown time; the second a 6 hour drawdown time. TSS removal rates were much higher for the second configuration. As a result, the manufacturer is now marketing the Stormvault solely with the 6 hour drawdown configuration.