



UNIVERSITY OF MASSACHUSETTS AT AMHERST

Water Resources Research Center
Blaisdell House, UMass
310 Hicks Way
Amherst, MA 01003

Massachusetts Stormwater
Evaluation Project

(413) 545-5532
(413) 545-2304 FAX
www.mastep.net

MASTEP Technology Review

Technology Name: Hydro International Downstream Defender

Studies Reviewed: NJCAT Technology Review Hydro International February 2005

MASTEP Review Date: 1-29-08

Reviewer: Jerry Schoen

Rating: 2

Brief rationale for rating: This is a reasonably well-conducted laboratory study. However, only 8 test runs were performed. Ideally, at least 10-15 runs would be performed, covering a wide range of flow rate and influent TSS concentration combinations. In addition, tests were performed with no initial sediment loading in the unit (a 50% initial loading is considered an appropriate representation of "real world" conditions); the F-95 Sand mix used in test contains fewer fine particles than is desirable; and no information is provided on quality control procedures used in the test.

Other Comments:

- This test was performed by HI personnel at the HI laboratory facilities. Third-party studies performed at certified state or national laboratories are preferred.
- Because the F-95 sand mix used for this test consists of a relatively high proportion of sand-sized particles vs. silt, this study is more likely to predict performance at sites with large particle loadings than at sites where small particle sizes are expected.
- Removal rates were calculated using a mass balance method, which captures all sediments used in the test and compares dry weight of influent sediments vs. those captured by the system. This is the most accurate method of performing laboratory tests.
- The report describes a "confirmation test" performed on a separate date, witnessed by the Maine Department of Environmental Protection. This test used a different method to measure solids removal (ASTM's Suspended Sediment Concentration method). Six runs were conducted, at flow rates from 611 – 644 gpm (or 1.36-1.44 cfs), with influent concentrations ranging from 190 mg/l to 289.3 mg/l. These test runs produced a mean removal efficiency of 86% SSC. Caution should be taken in comparing removal rates for these different tests, as the methods, flow ranges and influent sediment concentrations all differed between the two tests. Nonetheless, the second test does provide additional useful data that is generally consistent with the results of the initial HI study.