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MASTEP Technology Review

Technology Name: Oil – Grit Separator, 2 Chamber

Studies Reviewed: Effectiveness of Three Best Management Practices for Highway-Runoff Quality along Southeast Expressway, Boston MA

Date: January 2, 2009

Reviewer: Jerry Schoen

Rating: 2

Brief rationale for rating:

This robust study evaluated sediment removal efficiency at two locations over 49 and 53 storms, respectively. Study design, sampling and analysis methods, quality control, and data interpretation were all quite sound. The study was conducted prior to development of TARP protocols and either did not meet or did not document compliance with several TARP requirements.

TARP Requirements Not Met:

- No documentation of a Quality Assurance Project Plan
- Precipitation and flow were measured, but quantitative results not reported.
- Influent PSD was not reported in a manner consistent with TARP protocols.
- Sediment removal performance measured by SSC method but not by TSS method.
- No documentation of minimum precipitation event threshold or inter-event duration.

Other Comments

- Estimated SSC removal (measured by mass balance) was 28% and 35% for the two separators, respectively.
- Each separator received outflow from several catch basins. The catch basins captured a large proportion of large particles, releasing a relatively high % of fines into the separators. This likely reduced performance efficiency for the separators (compared to a stand-alone configuration), but the in this combined treatment system, the separators reduced the mass of suspended sediment by an additional 18% over efficiency of catch basins alone. The catch basin removal efficiency is discussed in greater detail in a separate profile on this web site.
- Inorganic and organic chemical constituents were monitored over 4 storm events. Concentrations found were consistent with values found in scientific literature for similar storm runoff and particle sizes.
- The benefits of street sweeping were evaluated by comparing the difference between suspended sediment loads before and after two sweeping events. The sweepers were successful in removing larger (> 0.5mm) particles, but sweeping was found to provide few water quality benefits.